

Taylor N. Andrews

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Summary

- Reproductive physiologist with 5 years of experience in reproductive management and 12 years of experience in beef production
- Primary author of 5 abstracts and contributing author of 6 peer-reviewed publications
- Experience in teaching reproductive physiology, artificial insemination, transrectal ultrasonography, and laboratory techniques in lecture, laboratory, and extension settings
- Experience in conceptualizing, drafting, and managing grants

Education

Doctor of Philosophy in Animal Science, Reproductive Physiology **August 2021-Present**

New Mexico State University (NMSU), Las Cruces, NM

Disseration Title: Evaluation of development strategies on growth, ovarian function, and embryonic growth in beef heifers grazing native rangelands

- Advisors: Drs. Adam Summers and Eric Scholljegerdes
- Minor in applied statistics
- 4.00/4.00 cumulative GPA

Master of Science in Animal Science, Reproductive Physiology **August 2019-August 2021**

South Dakota State University (SDSU), Brookings, SD

Thesis Title: Andrews, T.N. (2021). The interactions of change in nutrition prior to and after artificial insemination on plasma metabolites, steroid hormones, and uterine histotroph in beef heifers.

- Advisors: Drs. George Perry and Julie Walker
- 4.00/4.00 cumulative GPA

Bachelor of Science in Agriculture, Animal Sciences

August 2015-May 2019

The Ohio State University (OSU), Columbus, OH

- Minor: Biosciences

Professional Experience

Graduate Research and Teaching Assistant

August 2021-Present

New Mexico State University, Las Cruces, NM

- Conceptualize and direct research ideas with proper methodology for direct application to the beef industry
- Manage and direct nutrition and reproductive physiology interaction research projects within groups of ranch labor, graduate students, and undergraduate students
- Prepare and analyze data, including utilizing appropriate models in statistical software
- Draft and edit abstracts, manuscripts, and presentations for submission and publication

- Communicate research results at 2 regional and 1 national conference
- Awarded 2nd place in WSASAS graduate student paper competition

Graduate Research and Teaching Assistant

August 2019-August 2021

South Dakota State University, Brookings, SD

- Managed and directed in multiple reproductive physiology research projects and trials
- Promoted research and applied research project outcomes to beef producers
- Promoted and assisted in extension events, including artificial insemination schools and beef producer meetings
- Communicated research at 1 regional and 1 national conference
- Managed multiple research projects utilizing cooperating herds in South Dakota
- Drafted and edited abstracts, manuscripts, and presentations for submission and publication

Intern

June 2018-August 2018

Country View Family Farms, Willow Hill, PA

- Artificially inseminated 450 sows per week
- Assisted in herd health of 5,500 head farm

Farm Hand

2010-2019

CTA Livestock, Bellevue, OH

- Promoted and represented farm at beef industry events
- Managed breeding records and breeding selections for sheep flock
- Managed herd and flock health
- Directed and managed synchronization of estrus protocols for cattle herd

Extension Experience

United States Beef Academy Presenter

May 2022 and May 2023

Corona, NM

- Female anatomy and physiology, estrous cycles, and beef cattle fertility

Small Ruminant Field Day Presenter

November 2022

New Mexico State University, Corona, NM

- Small ruminant female anatomy and physiology and estrous cycles

Cattle Artificial Insemination Schools

2019-2021

South Dakota State University, Brookings, SD

- Demonstrated artificial insemination in live cattle and female reproductive tracts
- Lectured on the benefits and disadvantages of natural service and artificial insemination
- Assisted at five artificial insemination schools and approximately 100 people trained (20 per school)

Teaching Experience

Teaching Assistant

New Mexico State University, Las Cruces, NM

ANSC 1120: Introduction to Animal Science **Fall 2023 and Fall 2024**

- Graded weekly assignments and labs
- Assisted in teaching labs (4 sections)
- Lecture section of 160-200 students
- Lab section of 40-50 students (4 sections)

ANSC 1110: Animal Science Careers **Spring 2022, Spring 2023, and Spring 2024**

- Graded weekly assignments
- Lecture section of 140 students

ANSC 424: Swine Production **Fall 2023**

- Graded assignments
- Lecture section of 30 students

ANSC 301: Animal and Carcass Evaluation **Spring 2022-Fall 2023**

- Graded weekly assignments
- Lecture section of 20 students

ANSC 351: Agricultural Animals **Fall 2022**

- Graded weekly assignments
- Lecture section of 30 students

ANSC 423: Animal Breeding **Fall 2021**

- Graded monthly worksheets
- Assisted in lab sections
- Lecture section of 60 students

Teaching Assistant

South Dakota State University, Brookings, SD

ANSC 285: Livestock Evaluation and Marketing **Spring and Fall 2020**

- Graded weekly worksheets and exams
- Assisted in lab sections
- Lecture section of 80 students

ANSC 333: Reproductive Physiology **Fall 2019**

- Graded weekly quizzes and exams
- Assisted in teaching the ultrasonography lab
- Held office hours and tutored students weekly on lecture material
- Lecture section of 100 students

Undergraduate Teaching Assistant

The Ohio State University, Columbus, OH

Food, Agricultural, and Environmental Sciences 1100 **Fall 2016 and 2017**

- Assisted ten incoming students to transition to The Ohio State University
- Assisted in the ten students' four-year plans and course requirements
- Lecture section of 200 students

Guest Lecturer

New Mexico State University, Las Cruces, NM

ANSC 1110: Animal Science Careers **Spring 2023 and Spring 2024**

- Lectured on graduate school experiences

- Lecture section of 140 students
ANSC 1120: Introduction to Animal Science **Fall 2023**
 - Lectured on relevant topics on animal health
 - Lecture section of 160 students
ANSC 424: Swine Production **Fall 2023**
 - Lectured on female and male anatomy and physiology
 - Lecture section of 30 students
- South Dakota State University, Brookings, SD*
- ANSC 285: Livestock Evaluation and Marketing* **Spring 2020 and Fall 2020**
 - Lectured on growth and development in livestock
 - Lecture section of 55 students
 - ANSC 101: Introduction to Animal Science* **Fall 2019 and Spring 2021**
 - Lectured on various equipment and tools utilized in reproduction for livestock
 - Taught male and female reproductive anatomy using reproductive tracts
 - Lab sections of 30 students (3 sections)
 - DS 130: Introduction to Dairy Science* **Fall 2019**
 - Assisted in demonstrating ultrasonography for pregnancy detection in cattle
 - Taught female reproductive anatomy using reproductive tracts

Undergraduate Supervision

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| 1. Ashton Henington- NMSU Undergraduate Research Assistant | Spring 2024-Present |
| 2. LeeAnne Padilla- NMSU Undergraduate Research Assistant | Spring 2024-Present |
| 3. Natalie Grimm- NMSU Undergraduate Research Assistant | Spring 2024-Present |
| 4. Adigail Aizpuru- NMSU Undergraduate Research Assistant | Spring 2024-Present |
| 5. Santiago Garcia- NMSU Undergraduate Research Assistant | Spring 2024 |
| 6. Samantha Ekstrom- NMSU Undergraduate Research Assistant | Spring 2024 |

Grants and Fellowships

Federal Grants

1. "Evaluation of reproductive parameters and embryo development in beef heifers supplemented rumen undegradable protein" USDA NIFA Predoctoral Grant. PI: Taylor Andrews. Primary Mentor: Adam Summers. **Requested amount: \$114,948.** Grant was funded.

Industry Donations

1. "Evaluation of reproductive parameters and embryo development in beef heifers supplemented rumen undegradable protein" Zoetis Inc. University Small Research Grant Program. PI: Taylor Andrews, Adam Summers, and Eric Scholljegerdes. Product support grant. **Requested amount: \$3,230.** Zoetis Inc. donated products for the synchronization of estrus.
2. "Impacts of source and level of rumen undegradable protein on embryonic development in developing beef heifers" Reprologix. PI: Taylor Andrews. **Requested amount: \$6,500.** Reprologix donated time and services for oocyte pick-ups.

Technical Skills

Beef Cattle Management:

- Transrectal ultrasonography for pregnancy diagnosis from 28-150+ days of gestation
- Transrectal ultrasonography for significant ovarian significant structures and ovarian antral follicle count
- Artificial insemination
- Non-surgical castration of bulls from birth to 6 months of age
- Administering growth implants in growing calves from birth to 6+ months of age
- Vaccine and pharmaceutical administration following BQA standards
- Bull Breeding Soundness Exams

Sheep Management:

- Non-surgical castration of ram lambs from birth to 4 months of age
- Vaccine and pharmaceutical administration
- Paint Branding
- Transabdominal ultrasonography for pregnancy diagnosis from 60+ days of gestation

Lab Procedures:

- Blood centrifugation for harvest of serum and plasma
- Radioimmunoassays for estradiol and progesterone
- Enzyme-linked immunosorbent assays
- Colorimetric assays
- Tissue sectioning
- Immunofluorescence staining
- Preparation of oocytes for in-vitro fertilization
- Preparation of blastocyst embryos for culture

Data Analysis: SAS coding

Inventory and Record Management: Microsoft Excel

Tissue Collection:

- Blood collection via coccygeal and jugular vein
- Semen collection via electroejaculation
- Ovariectomy assistance
- Ovarian follicle aspiration
- Excision of corpus luteum from the ovary
- Oocyte collection
- Granulosa and theca cell collection

Publications

Peer reviewed (6)

1. Epperson, K.M., J.J.J. Rich, S. Menegatti Zoca, L.K. Quail, **T.N. Andrews**, A.C. Kline, F.J. White, R.F. Daly, R.A. Cushman, A.P. Snider, and G.A. Perry. 2024. Influence of commercial inactivated and modified-live virus vaccination at time of AI on corpus luteum function and development in beef cattle. *Reproduction Science*. *Accepted*.
2. Kline, A.C., S. Menegatti Zoca, K.M. Epperson, L.K. Quail, J.N. Ketchum, **T.N. Andrews**, J.J.J. Rich, J.R. Rhoades, J.A. Walker, and G.A. Perry. 2024. Evaluation of pregnancy associated glycoproteins assays for on farm determination of pregnancy status in beef cattle. *Plos One*. 19. doi.org/10.1371:journal.pone.0306325.
3. Ketchum, J. N. , L. K. Quail, K. M. Epperson, C. P. Guy, J. J. J. Rich, S. Menegatti Zoca, A. C. Kline, **T. N. Andrews**, J. A. Walker, P. L. Piza Fontes, S. K. Johnson, M. P. T. Owen, D. Ehorn, K. M. Harvey, A. F. Summers, and G. A. Perry. 2023. Evaluation of two beef cow fixed-time AI protocols that utilize resynchronization. *Theriogenology*. 213: 59-65. doi.org/10.1016/j.theriogenology.2023.09.017.
4. Ketchum, J.N., G.A. Perry, L.K. Quail, K.M. Epperson, M.A. Ogg, A.L. Zezeski, J.J.J. Rich, S. Menegatti Zoca, A.C. Kline, **T.N. Andrews**, M.S. Ortega, M.F. Smith, and T.W. Geary. 2023. Influence of preovulatory estradiol on the maintenance of pregnancy in beef cattle. *Animal Reproduction Science*. 255:107274. doi.org/10.1016/j.anireprosci.2023.107274.
5. Menegatti Zoca, S. J. A. Walker, A. C. Kline, **T. N. Andrews**, J. J. J. Rich, K. M. Epperson, J. Nora Drum, M. Sofia Ortega, R. A. Cushman, and G. A. Perry. 2023. Relationship of field and *in vitro* fertility of dairy bulls with sperm parameters, including DAG1 and SERPINA5 proteins. *Frontiers in Animal Science*. 4:58. doi.org/10.3389/fan-im.2023.1180967.
6. Perry, G. A., S. D. Perkins, E. J. Northrop, J. J. J. Rich, K. M. Epperson, **T. N. Andrews**, A. C. Kline, L. K. Quail, J. A. Walker, C. L. Wright, and J. R. Russell. 2021. Impact of trace mineral source on beef replacement heifer growth, reproductive development, and biomarkers of maternal recognition of pregnancy and embryo survival. *Journal of Animal Science* 99: doi.org/10.1093/jas/skab160.

In Preparation/ Submitted (2)

1. **Andrews, T. N.**, K. M. Epperson, J. J. J. Rich, S. M. Zoca, A. C. Kline, L. K. Quail, S. R. McCoski, C. Sanford, A. L. Zezeski, T. W. Geary, J. A. Walker, and G. A. Perry. 2024. The interactions of change in nutrition prior to and after AI on plasma non-esterified fatty acids, plasma mineral concentrations, and uterine histotroph in beef heifers. *Applied Animal Science*. *In preparation*.
2. Chavez, M.K., E.A. Melchior-Tiffany, C. Anderson, A.B. Selman, S.L. Rosasco, **T.N. Andrews**, S.H. Cox, R.L. Dunlap, R.A. Cushman, J.A. Hernandez-Gifford, E.J. Scholljegerdes, and A.F. Summers. The evaluation of ruminal undegradable protein supplementation level on growth performance and ovarian development in beef heifers grazing native rangelands. *Journal of Animal Science*. *In preparation*.

Proceedings (7)

1. **Andrews, T.N.**, E.J. Scholljegerdes, G.A. Perry, S.H. Cox, R.L. Dunlap, C.D. Bedke, K.L. Gallacher, J.A. Cooper, and A.F. Summers. 2024. The Influence of Growth Promoting Implants at Weaning with Different Supplementation Levels on Growth Performance and

Ovarian Parameters in Developing Beef heifers. Western Section American Society of Animal Science 2024.

2. Zoca, S. M., J. A. Walker, J. J. J. Rich, K. M. Epperson, **T. N. Andrews**, A. C. Kline, J. N. Drum, M. S. Ortega, and G. A. Perry. 2022. Relationship of DAG1 and SERPINA5 sperm proteins with bull fertility. South Dakota Beef Day.
3. Kline, A. C., J. A. Walker, **T. N. Andrews**, S. M. Zoca, K. M. Epperson, L. K. Quail, J. J. J. Rich, J. R. Rhoades, and G. A. Perry. 2022. Use of Pregnancy Associated Glycoproteins to Determine Fetal Age Throughout Gestation and Clearance Rate in Postpartum Beef Cattle. South Dakota Beef Day.
4. Kline, A. C., J. A. Walker, **T. N. Andrews**, S. M. Zoca, K. M. Epperson, L. K. Quail, J. N. Ketchum, J. J. J. Rich, J. R. Rhoades, and G. A. Perry. 2022. Comparison of Lateral Flow to Other Pregnancy Determination Methods in Order to Determine Accuracy of Pregnancy Status in Beef Cattle Pre and Postpartum. South Dakota Beef Day.
5. **Andrews, T. N.**, K. M. Epperson, J. J. J. Rich, S. M. Zoca, A. C. Kline, L. K. Quail, A. L. Zezeski, T. W. Geary, J. A. Walker, and G. A. Perry. 2021. Interactions of change in nutrition on plasma metabolites, steroid hormone production, and uterine environment. South Dakota Beef Day.
6. Kline, A. C., K. M. Epperson, J. J. J. Rich, S. M. Zoca, **T. N. Andrews**, L. K. Quail, J. R. Rhoades, and G. A. Perry. 2021. Use of Pregnancy Associated Glycoproteins to Determine Fetal Age Throughout Gestation. South Dakota Beef Day.
7. Zoca, S. M., K. M. Epperson, J. J. J. Rich, **T. N. Andrews**, A. C. Kline, G. A. Perry. 2020. Use of Sperm Proteins as a Putative Fertility Marker. South Dakota Beef Day.

Popular press (2)

1. **Andrews, T.N.**, S.L. Rosasco, E.J. Scholljegerdes, and A.F. Summers. Utilization of Growth Promoting Implants in Developing Beef Heifers. Progressive Cattle Magazine. *Submitted*.
2. Epperson, K. M., S. M. Zoca, **T. N. Andrews**, A. C. Kline, and G. A. Perry. Reproductive Success is Dependent on Nutritional Management Pre and Post-Breeding. Progressive Cattle Magazine. January 2020.

Abstracts

Primary Author (5)

1. **Andrews, T.N.**, E.J. Scholljegerdes, G.A. Perry, S.H. Cox, R.L. Dunlap, C.D. Bedke, K.L. Gallacher, J.A. Cooper, and A.F. Summers. 2024. The influence of growth promoting implants at weaning with different supplementation levels on growth performance and ovarian parameters in developing beef heifers. 2024. Western Section American Society of Animal Science.
2. **Andrews, T.N.**, R. A. Cushman, A. P. Snider, G. A. Perry, , S.H.Cox, R.L. Dunlap, C. Anderson, M.K. Chavez, K.L. Gallacher, E.A. Melchior-Tiffany, A. B. Selman. E.J. Scholljegerdes, and A.F. Summers. 2023. The influence of Synovex- C growth implants at weaning with different supplementation levels on ovarian parameters in developing beef heifers. Annual American Society of Animal Science.
doi.org/10.1093/jas/skad281.481

3. **Andrews, T.N.**, R.A. Cushman, A.P. Snider, S.H. Cox, R.L. Dunlap, C. Anderson, M.K. Chavez, K.L. Gallacher, E.A. Melchior-Tiffany, E.J. Scholljegerdes, and A.F. Summers. 2022. The influence of Synovex-C growth implants at weaning with different supplementation levels on growth performance and antral follicle counts in developing beef heifers. Western American Society of Animal Science. doi.org/10.1093/jas/skac313.044.
4. **Andrews, T. N.**, J. A. Walker, K. M. Epperson, J. J. J. Rich, S. M. Zoca, A. C. Kline, L. K. Quail, S. R. McCoski, C. Sanford, A. L. Zezeski, T. W. Geary, and G. A. Perry. 2021. The interactions of change in nutrition after artificial insemination on plasma metabolites, steroid hormones, and uterine histotroph in beef heifers. Annual American Society of Animal Science. doi:10.1093/jas/skab235.533.
5. **Andrews, T. N.**, J. A. Walker, K. M. Epperson, J. J. J. Rich, S. M. Zoca, R. D. Lawrence, A. L. Zezeski, T. W. Geary, and G. A. Perry. 2021. The interactions of change in nutrition on uterine environment and cholesterol concentrations in beef cattle. Midwest Section American Society of Animal Science. doi:10.1093/jas/skab054.180.

Contributing Author (12)

1. Quail, L. K., J. N. Ketchum, K. M. Epperson, S. Menegatti Zoca, **T. N. Andrews**, A. C. Kline, J. J. J. Rich, A. L. Zezeski, M. A. Ogg, M. F. Smith, G. A. Perry, and T. W. Geary. 2023. Survival analysis of pregnancy considering estrual activity by the time of embryo transfer in beef cattle. International Ruminant Reproduction Symposium.
2. Gallacher, K.L., R.L. Dunlap, S.H. Cox, **T.N. Andrews**, E.A. Melchior-Tiffany, and A.F. Summers. 2022. The influence of a single administration of prostaglandin on estrous synchronization in range ewes. Western American Society of Animal Science. doi.org/10.1093/jas/skac313.034.
3. Ketchum, J. N, L. K. Quail, K. M. Epperson, C. P. Guy, J. J. J. Rich, S. M. Zoca, A. C. Kline, **T. N. Andrews**, J. A. Walker, P. L. P. Fontes, S. K. Johnson, M. P. T. Owen, K. M. Harvey, A. F. Summers, and G. A. Perry. 2022. Evaluation of two beef cow fixed-time AI protocols that utilize pre-synchronization. Annual American Society of Animal Science. doi.org/10.1093/jas/skac247.257.
4. Zoca, S. M, J. A. Walker, A. C. Kline, **T. N. Andrews**, J. J. J. Rich, K. M. Epperson, J. N. Drum, M. S. Ortega, and G. A. Perry. 2022. Relationship of sperm plasma serine protease inhibitor (SERPINA5) and dystroglycan (DAG1) proteins with dairy bull fertility. Annual American Society of Animal Science. doi.org/10.1093/jas/skac247.640.
5. Epperson, K. M., L. K. Quail, J. J. J. Rich, S. M. Zoca, **T. N. Andrews**, A. C. Kline, F. J. White, R. F. Daly, and G. A. Perry. 2022. Bovine luteal cell apoptosis following administration of a commercial inactivated or modified-live virus vaccine at time of AI. Annual American Society of Animal Science. doi.org/10.1093/jas/skac247.631.
6. Quail, L. K., J. N. Ketchum, K. M. Epperson, S. M. Zoca, **T. N. Andrews**, A. C. Kline, J. J. J. Rich, A. L. Zezeski, M. A. Ogg, J. R. Rhoades, M. F. Smith, G. A. Perry, and T. W. Geary. 2022. Factors impacting abundance of PAGs after embryo transfer in beef cattle. Southern American Society of Animal Science. doi:10.1093/jas/skac028.060.
7. Epperson, K. M., J. J. J. Rich, S. M. Zoca, L. K. Quail, **T. N. Andrews**, A. C. Kline, J. A. Carroll, N. C. Burdick Sanchez, F. White, R. F. Daly, and G.A. Perry. 2021. Influence of commercial inactivated and modified-live virus vaccination at time of AI on corpus luteum function and development in beef cattle. Society for the Study of Reproduction, Meeting.

8. Ketchum, J. N., G. A. Perry, K. M. Epperson, L. K. Quail, M. A. Ogg, A. L. Zezeski, J. J. Rich, S. M. Zoca, A. C. Kline, **T. N. Andrews**, M. S. Ortega, M. F. Smith, and T. W. Geary. 2021. Preovulatory estradiol elicits an effect on pregnancy maintenance. Society for the Study of Reproduction, Meeting.
9. Kline, A. C., J. A. Walker, **T. N. Andrews**, S. M. Zoca, K. M. Epperson, L. K. Quail, J. N. Ketchum, J. J. J. Rich, J. R. Rhoades, and G. A. Perry. 2021. Use of a lateral flow PAG assay for determination of pregnancy status and clearance of PAGs in beef cattle. Society for the Study of Reproduction, Meeting.
10. Kline, A. C., K. M. Epperson, J. J. J. Rich, S. M. Zoca, **T. N. Andrews**, L. K. Quail, J. R. Rhoades, J. A. Walker, and G. A. Perry. 2021. Factors influencing clearance of pregnancy-associated glycoproteins in postpartum beef cattle. Annual American Society of Animal Science. doi:10.1093/jas/skab235.226.
11. Zoca, S. M., J. A. Walker, **T. N. Andrews**, A. C. Kline, J. J. J. Rich, K. M. Epperson, J. N. Drum, M. S. Ortega, and G. A. Perry. 2021. Relationship between sire conception rate, sperm motility, sperm SERPINA5 relative concentration and *in vitro* produced embryos in dairy bulls. Annual American Society of Animal Science. doi: 10.1093/jas/skab235.569.
12. Kline, A. C., K. M. Epperson, J. J. J. Rich, S. M. Zoca, **T. N. Andrews**, J. R. Rhoades, and G. A. Perry. 2021. Use of pregnancy associated glycoproteins to determine fetal age throughout gestation. Midwest Section American Society of Animal Science. doi:10.1093/jas/skab054.339.

Professional Organizations

American Society of Animal Science (ASAS)

2021-Present

The Honor Society of Agriculture-Gamma Sigma Delta

April 2021-Present

Service

Graduate Student Association

2021-Present

New Mexico State University, Las Cruces, NM

- Vice President
 - Oversaw meetings in the absence of the president
 - Assisted in planning events

2021-2022

Annual ASAS Undergraduate Academic Quadrathlon

July 2023

- Volunteered to assist with laboratory practicum
- Assisted with the beef cattle station including directing participants to collect blood samples, body condition score cattle, proper semen handling, etc.

Graduate Student Association

2019-2021

South Dakota State University, Brookings, SD

- Social Chair
 - Organize and manage social events for the members
 - Assist in catering events to earn funds for the association

Livestock Judging Team

2018

The Ohio State University, Columbus, OH

- Evaluated livestock and presented oral reasons
- Navigated working with a team

- Learned how to make and defend quick decisions

Alpha Sigma Upsilon

2016-2019

The Ohio State University, Columbus, OH

- Vice President
 - Improved forms of communication between chairmen and executive board
 - Improved constitution for future generations of sorority women
- Philanthropy and Service Chairmen
 - Planned an event benefitting Farm Aid for 100 people

Saddle and Sirloin Club

2015-2019

The Ohio State University, Columbus, OH

- Scarlet and Gray Midwest Showdown Co-Chairmen
 - Decreased production costs
 - Managed all the revenue and expenses for the show

Awards

1. Western Section ASAS, Graduate Student Paper Competition, 2nd place

2024